



UNIVERSITY
OF CENTRAL ASIA

MOUNTAIN SOCIETIES RESEARCH INSTITUTE

Strengthening Research for Sustainable Land Management in Kyrgyzstan and Tajikistan

Research Brief, February 2014



Decision makers in the transition from a centrally planned Soviet to a decentralised market oriented system can benefit from applied empirical research particular to Central Asian mountain societies that: 1) engages stakeholders; 2) addresses land use and management systems; and 3) incorporates local and international concepts and approaches. This Brief recommends actions to strengthen sustainable land management research in Kyrgyzstan and Tajikistan.

Recommendations:

- **Conduct Participatory Research**
- **Use Systems Thinking**
- **Increase Access to Research Findings**



*Small agricultural plots and near-village pastures.
Sokuluk watershed, Chui oblast, Kyrgyzstan
(Jyldyz Shigaeva)*

Challenges to SLM Research

After independence, the capacity of local research institutions was undermined by the withdrawal of Soviet support (Abdurasulov 2007). Conversely, internationally-supported research, while limited by donor requirements, increased dramatically (Kerven et al. 2012).

A thorough and structured review of sustainable land management (SLM) literature (see boxed text below) identified three contemporary challenges to effective, applied SLM research:

- 1) a weak interface between research and action;
- 2) limited understanding of social-ecological systems beyond simple cause-and-effect; and
- 3) lack of collaboration between local and international researchers.

Each challenge is exacerbated by the tension and confusion surrounding the assumed parallel application of the Western concept of SLM and the Soviet concept of rational use of land resources (RULR). In fact, SLM and RULR are different.

SLM vs. RULR

The concept of SLM emerged from the 1992 United Nations Conference on Environment and Development and quickly gained popularity in Western scientific and development circles. SLM equally emphasises economic, environmental and social dimensions of sustainability and encourages stakeholder engagements in decision-making. The concept is widely used in donor-supported projects in Central Asia. However, its meaning is often conflated with what many Central Asian researchers and decision-makers refer to as the Soviet-era equivalent principle of RULR.

In contrast to SLM, RULR emphasised maximum production of land resources, with due consideration to protecting the land and optimising interactions with environmental factors. RULR was embedded within the Soviet planning system in which the centralised authority dictated production parameters, leaving researchers to develop the technological capacity to achieve defined targets. This principle fit the planned economy but lacks relevance for contemporary decentralised resource governance. Additionally, unlike SLM, social and political dimensions of land use and management are not part of the RULR principle.



Sustainable Land Management in Kyrgyzstan and Tajikistan: A Research Review

Mountain Societies Research Institute (MSRI), *Background Paper No. 2*

This background paper reviews the state of research on sustainable land management in Kyrgyzstan and Tajikistan and analyses the interface between research and action. Using the Global Land Project (GLP 2005) analytical framework, the authors analysed the distribution of 131 selected publications on SLM in Kyrgyzstan and Tajikistan (including a clearly defined set of local and international academic and gray literature) across the GLP framework's components and links in a social-ecological system. The research-action interface was analysed through the literature as well as through a stakeholder feedback session.



Soviet-era mosaic on a house depicting the importance of agricultural productivity, Dushanbe, Tajikistan (Bettina Wolfram 2011)

State of SLM Research

Weak Interface Between Research and Action

The research review, which also included a stakeholder feedback session at the 2012 Central Asian Mountain Partnership Forum, concluded that directly applicable research on SLM is rare in Kyrgyzstan and Tajikistan. There was a broadly shared perception among stakeholders at the Forum that research on Kyrgyzstan and Tajikistan lacks clear utility. This perception was supported by a finding that less than 14 percent of all publications and none of the local academic literature included participatory research processes. Potential end users of research are less likely to use research outputs, even practical recommendations, when they are not involved in research processes.

Lack of stakeholder engagement in local academic research is likely due to the absence of a tradition of participatory research in the region (Childress 2004) and the continued influence of the RULR principle, which was designed to fit a system that prescribed central doctrines, norms and values and left little room for societal engagement.

Despite increasing popularity of participatory approaches in Western research, international academic studies on SLM in Kyrgyzstan and Tajikistan pay insufficient attention to different perspectives and how they have been shaped by history. This can limit successful negotiations on complex resource use and degradation issues (Liechti 2012). General frameworks are often applied without local adaptations (Froeblich and Wegerich 2007). Short time frames and language barriers may also hamper local stakeholder engagement in international research.

When researchers do engage stakeholders, particularly in identifying knowledge needs and developing research strategies, the result is often a wish list

rather than the strategic identification of knowledge gaps. The vast literature on participatory research can provide guidance for improvement. However, many of existing challenges are region specific, rooted in dominant ideas and historical relationships between researchers and users of research. These should be accounted for.

Limited Understanding of Social-ecological Systems Beyond Simple Cause-and-Effect

In SLM literature on Kyrgyzstan and Tajikistan, there is strong emphasis on the impact of changes in land use and management on ecosystems. Little attention is paid, however, to the implications of these impacts on ecosystem services or how people respond to them. This suggests a continued reliance on simple cause-and-effect understandings. In contrast, systems thinking, which is used in other parts of the world, emphasises the impact of land use change on social-ecological systems services and decision-making, incorporating critical feedback loops and multiple factors of influence.

Local and international research publications were similar in that they both lacked systems thinking. However, they differed dramatically in focus. Local research focused on ecological and technical issues such as reseed-ing, weed control, fencing and fertilisation. International literature focused on institutional aspects of SLM, such as pasture and forest governance.

The ecological focus of local literature suggests the continued influence of RULR in which social and political dimensions were absent. The large proportion of international publications on social systems reflects an emphasis on promoting institutional change. The imbalances between the two sets of literature suggest that neither local nor international literature sufficiently present a socio-ecological system-level understanding of land use and management in Kyrgyzstan and Tajikistan.

Case Studies



Stakeholder Participation: PALM Strategy and Action Plan for SLM

A participatory approach was used in developing the SLM Strategy and Action Plan for the Pamir-Alai mountain region in Kyrgyzstan and Tajikistan, creating a common platform that included different stakeholders. Activities included field study tours to collect primary data from local actors, coordination meetings across the region and multi-level stakeholder forums in Osh, Khorog and Jirgital to identify priorities and brainstorm for action plans (PALM 2011).

Systems Thinking: Modeling Biomass Management of Farming Households

A biomass management model of farming households in rural Tajikistan was developed to address the trade-offs between meeting human needs and ensuring soil conservation. This model uses components of Mathematical Material Flow Analysis to link household needs to on-farm recycling of organic matter. The dynamic model quantitatively describes the biomass management of food, fodder and energy and the potential to recycle organic matter on-farm in rural Tajikistan (Ruppen 2012).



Improving Access to Research: Special Issue of *Mountain Research and Development*

MSRI researchers served as guest editors of a special issue of the open-access, international peer-reviewed journal

Mountain Research and Development on land use and management in Central Asia. MSRI engaged both international and local researchers to contribute; produced the issue in both Russian and English; and distributed it broadly to stakeholders. An aim of the special issue was to increase awareness and collaboration between international and local research.

Lack of Collaboration Between Local and International Researchers

The different focus of local and international research could prove complementary. However, there is little evidence of mutual awareness and collaboration between local and international researchers. This includes a lack of explicit analysis of the critical differences between SLM and RULR. This is likely due to capacity constraints, language barriers and lack of access to literature and other resources.

Recommendations

Conduct Participatory Research

Participatory research processes involving potential users of research findings are critical to ensure that the focus and findings of research are relevant and inform decision-making.

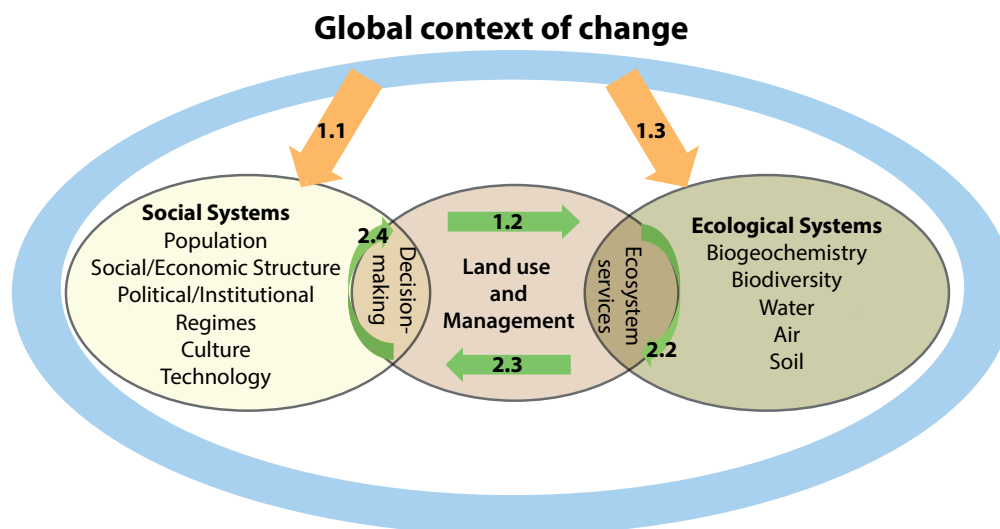
Stakeholder participation can be integrated into:

- 1) **Defining the research problem**, including identifying priorities and a clear action-oriented goal, and allowing for different perspectives.
- 2) **Designing the research strategy**, including research methods and the role of stakeholders in data collection and analysis.
- 3) **Creating results**, including the application of the collaboratively designed methods to address the problem and review of preliminary findings by stakeholders.
- 4) **Application of research results**, including accessible language and formats for non-academics, dissemination, and applying research findings to SLM practice and policy development.

Monitoring, evaluation and learning specifically focused on user engagement can accompany each stages (Talwar et al. 2011).

To overcome challenges in using participatory research in Central Asia, we recommend analysis of regional norms and relationships between researchers and other stakeholders and using international literature on participatory processes to develop appropriate participatory research processes for Central Asia

Figure 1. Global Land Project Framework (GLP 2005)



Use Systems Thinking

Decisions regarding land use and management often have unpredictable consequences due to the complexity of social-ecological systems. Systems thinking can help researchers and other stakeholders understand the full implications of decisions by considering feedback loops and multiple factors of influence.

For example, a decision to use pesticides to increase crop yield should consider both short-term increases in crop yield and the long-term development of pesticide-resistant insects, soil damage and water pollution. Other factors affecting yield, such as seed selection and changing weather patterns, should also be considered.

The Global Land Project Framework provides a useful model to consider linked social-ecological systems (See Figure 1 for modified version of the framework). The framework involves understanding how changes in land use impact ecosystems (arrow 1.2); how changes in ecosystem structure and functioning affect the delivery of ecosystem services (arrow 2.2); how ecosystem services are linked to human well-being (arrow 2.3); and how people in different contexts respond to changes in ecosystem service provision (arrow 2.4). Global factors should also be considered, such as how globalisation and population change affect regional and local land use decisions (arrow 1.1); and how the atmospheric, biogeochemical and biophysical dimensions of global change affect ecosystem structure and function (arrow 1.3).

Definitions

Sustainable Land Management: “The use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions” (United Nations 1992).

Rational Use of Land Resources: Land use in which “all land users, throughout the production process, ensure maximum achievement of the objectives of their land use while giving due consideration to protecting the land and maintaining optimal interaction with environmental factors” (*Gosudarstvennyy Standart* (GOST standard) 26640-85 on Land: Terms and Definitions 1987).

Systems Thinking: Understanding the relationships between the various parts of a whole and the implications of actions on the parts, their relationships and the whole. Systems thinking is widely used in ecology (Smith et al. 2012) and in natural resource management (Bosch et al. 2007).

Participatory Research: A form of investigation in which researchers work with stakeholders at multiple stages of the research process, including defining the research problem, designing the research strategy, creating and applying results (Talwar et al. 2011).

Increase Access to Research Findings

Increasing access to research publications and data can help increase collaboration between local and international researchers. This can be done by:

- **Mapping knowledge:** Existing knowledge management tools should be adapted for use in Central Asia. Other activities and media, such as public lectures and policy briefs, can help make research data widely accessible, facilitating awareness of studies, the dissemination of findings, discussion and collaboration.
- **Online, open access to academic publications:** International researchers should publish in open access journals. Local researchers should post their publications online and provide abstracts in English.
- **Encourage peer-reviewed publishing:** Local researchers should have incentives (e.g. salary increases and promotions) to publish peer-reviewed articles in international journals. PhD candidates (aspirants) should receive training to publish internationally.

Mountain Societies Research Institute Knowledge Hub

<http://MSRI.ucentralasia.org/>



Mountain Societies Research Institute Knowledge Hub is an interactive source of information on Central Asian mountain societies and an interface for researchers, practitioners and policymakers. It includes the MSRI Library; databases and applications to search for relevant information and networks; information and data on thematic studies on the region; the collected works of projects conducted in Central Asia with fully searchable archives; and information on partners and contributors to the Knowledge Hub. Users can register for Hub access. Materials are primarily in English and Russian, but also include Central Asian and other languages, and users can specify language in their search.

Further Reading

Abdyrasulov, Y., 'Without Basement... Kyrgyz Science Today', *Slovo Kyrgyzstana*, 05 Oct. 2007, accessed 29 May 2013, <http://www.centrasia.ru/newsA.php?st=1173079380>

Bosch, O.J.H., et al., 'Getting the Big Picture in Natural Resource Management—Systems Thinking as 'Method' for Scientists, Policy Makers and Other Stakeholders', *Systems Research and Behavioral Science*, 24/2 (2007), 217-232.

Childress, M., 'Agrarian Research Institutes and Civil Society in Kazakhstan and Kyrgyzstan: In Search of Linkages' [paper], (UN Research Institute for Social Development, 2004).

Froebrich, J., and Wegerich, K., 'The Fog Problem in Central Asia - Deficiencies in International Community Research to Support Water and Food Security', *Irrigation and Drainage Systems*, 21/3-4 (2007).

GLP. "Science Plan and Implementation Strategy". IGBP Report No. 53/IHDP Report No.19.(Stockholm: IGBP Secretariat, 2005).

Kerven, C., et al., 'Researching the Future of Pastoralism in Central Asia's Mountains: Examining Development Orthodoxies', *Mountain Research and Development*, 32/3 (2012), 368-377.

Liechti, K., 'The Meanings of Pasture in Resource Degradation Negotiations: Evidence From Post-Socialist Rural Kyrgyzstan', *Mountain Research and Development*, 32/3 (2012), 304-312.

PALM Strategy and Action Plan for Sustainable Land Management in the High Pamir and Pamir-Alai Mountains. PALM, GEF/UNEP/UNU Project 'Sustainable Land Management in the High Pamir and Pamir-Alai Mountains – Integrated and Transboundary Initiative in Central Asia' (Bishkek, Kyrgyzstan / Dushanbe, Tajikistan: PALM, 2011).

Ruppen, S., 'A Systemic Biomass Management Analysis of Small-Scale Farmers in the Hill-Zone of Western Tajikistan', MSc Thesis (Centre of Development and Environment, University of Bern, 2012).

Smith, P., et al., 'Systems Approaches in Global Change and Biogeochemistry Research', *Philosophical Transactions of the Royal Society Biological Sciences*, (2012).

Talwar, S., et al., 'User Engagement in Sustainability Research', *Science and Public Policy*, 38/5 (2011), 379-390.

United Nations. 'Agenda 21: Press Summary. United Nations Earth Summit', (New York: United Nations, 1992).

Authors



Jyldyz Shigaeva

Research Fellow,
Mountain Societies Research Institute,
University of Central Asia
zhyllyz.shigaeva@ucentralasia.org



Chad Dear

Senior Research Scientist,
Mountain Societies Research Institute,
University of Central Asia
chad.dear@ucentralasia.org



Bettina Wolfgramm

Research Scientist, Centre for Development and Environment, University of Bern and
Research Associate,
Mountain Societies Research Institute,
University of Central Asia
bettina.wolfgramm@cde.unibe.ch

The University of Central Asia's **Mountain Societies Research Institute** (MSRI) is dedicated to supporting and enhancing the resilience and quality of life of mountain societies through the generation and application of sound research. MSRI has five objectives:

- To generate new knowledge on mountain societies through sound research;
- To enhance Central Asian research capacity to conduct sound research relevant to mountain societies;
- To serve as a knowledge hub for scholars, development practitioners and decision-makers;
- To inform policy and practice through sound research; and
- To contribute to the development of UCA academic programmes relevant to mountain societies.

MSRI Research Briefs highlight recommendations for research that inform policy and practice in Central Asian mountain areas. Briefs are based on MSRI Background Papers that assess the state of research on topics critical to Central Asian mountain societies.

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Keywords:

Sustainable Land Management (SLM), Rational Use of Land Resources (RULR), Systems Thinking, Participatory Research.

Photo on cover by Hanspeter Liniger, Land users, policy makers and researchers discuss land management and resilience to climate change in Tajikistan, Faizabad district.

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MSRI BACKGROUND PAPER SERIES



Pastoralism and Farming in Central Asia's Mountains: A Research Review

This paper reviews the distinctive characteristics of mountain agro-pastoralism in Central Asia. The paper includes a discussion of past and present research directions and background to farming and raising livestock in the mountains. Key findings focus on biophysical, agricultural, climatic, governance and socio-economic aspects of the material, and the social and political environments within which agro-pastoralism is practiced in the region. Recommendations for future research are included.



Sustainable Land Management in Kyrgyzstan and Tajikistan: A Research Review

This paper reviews the state of research on sustainable land management in Kyrgyzstan and Tajikistan and analyses the interface between research and action. Recommendations are made for targeted, application-focused, multistakeholder research and knowledge sharing, which engages local and international researchers as well as practitioners, policy-makers and land users.



Mountain Tourism and Sustainability in Kyrgyzstan and Tajikistan: A Research Review

This paper focuses on Mountain Tourism and Sustainability in Kyrgyzstan and Tajikistan. Tourism is one of the largest and fastest growing industries in the world and government, civil society and the private sector in Kyrgyzstan and Tajikistan place increasing emphasis on developing this industry. This paper examines relevant literature on these two countries through the framework of sustainability. The paper identifies gaps in the literature and recommends topics for future research and ways to strengthen research on tourism.